

SEQUENCE LISTING

<110> Freeman, Gordon J
Nadler, Lee M
Gray, Gary S

<120> Tumor Cells Modified To Express B7-2 With Increased
Immunogenicity And Uses Therefor

<130> WYS-018.04

<140> 10/767,561

<141> 2004-01-28

<150> 08/101,624

<151> 1993-07-26

<150> 08/109,393

<151> 1993-08-19

<160> 17

<170> PatentIn version 3.5

<210> 1

<211> 1120

<212> DNA

<213> Homo sapiens

<400> 1

cacaggggtga aagctttgct tctctgctgc tgtaacaggg actagcacag acacacggat	60
gagtgggggtc atttccagat attagggtcac agcagaagca gccaaaatgg atccccagtg	120
cactatggga ctgagtaaca ttctctttgt gatggccttc ctgctctctg gtgctgctcc	180
tctgaagatt caagcttatt tcaatgagac tgcagacctg ccatgccaat ttgcaaactc	240
tcaaaaccaa agcctgagtg agctagtagt attttggcag gaccaggaaa acttggttct	300
gaatgaggta tacttaggca aagagaaatt tgacagtgtt cattccaagt atatgggccg	360
cacaagtttt gattcggaca gttggaccct gagacttcac aatcttcaga tcaaggacaa	420
gggcttgat caatgtatca tccatcacia aaagcccaca ggaatgattc gcatccacca	480
gatgaattct gaactgtcag tgcttgctaa cttcagtcaa cctgaaatag taccaatttc	540
taatataaca gaaaatgtgt acataaattt gacctgctca tctatacacg gttaccaga	600
acctaagaag atgagtgttt tgctaagaac caagaattca actatcgagt atgatggat	660
tatgcagaaa tctcaagata atgtcacaga actgtacgac gtttccatca gcttgtctgt	720
ttcattccct gatgttacga gcaatatgac catcttctgt attctggaaa ctgacaagac	780
gcggctttta tcttcacctt tctctataga gcttgaggac cctcagcctc cccagacca	840

cattccttgg attacagctg tacttccaac agttattata tgtgtgatgg ttttctgtct	900
aattctatgg aaatggaaga agaagaagcg gcctcgcaac tcttataaat gtggaaccaa	960
cacaatggag agggaagaga gtgaacagac caagaaaaga gaaaaaatcc atatacctga	1020
aagatctgat gaagcccagc gtgttttttaa aagttcgaag acatcttcat gcgacaaaag	1080
tgatacatgt ttttaattaa agagtaaagc ccaaaaaaaaa	1120

<210> 2
 <211> 329
 <212> PRT
 <213> Homo sapiens

<400> 2

Met	Asp	Pro	Gln	Cys	Thr	Met	Gly	Leu	Ser	Asn	Ile	Leu	Phe	Val	Met
1				5					10					15	

Ala	Phe	Leu	Leu	Ser	Gly	Ala	Ala	Pro	Leu	Lys	Ile	Gln	Ala	Tyr	Phe
			20					25					30		

Asn	Glu	Thr	Ala	Asp	Leu	Pro	Cys	Gln	Phe	Ala	Asn	Ser	Gln	Asn	Gln
		35					40					45			

Ser	Leu	Ser	Glu	Leu	Val	Val	Phe	Trp	Gln	Asp	Gln	Glu	Asn	Leu	Val
50						55					60				

Leu	Asn	Glu	Val	Tyr	Leu	Gly	Lys	Glu	Lys	Phe	Asp	Ser	Val	His	Ser
65					70					75					80

Lys	Tyr	Met	Gly	Arg	Thr	Ser	Phe	Asp	Ser	Asp	Ser	Trp	Thr	Leu	Arg
				85					90					95	

Leu	His	Asn	Leu	Gln	Ile	Lys	Asp	Lys	Gly	Leu	Tyr	Gln	Cys	Ile	Ile
			100					105					110		

His	His	Lys	Lys	Pro	Thr	Gly	Met	Ile	Arg	Ile	His	Gln	Met	Asn	Ser
		115					120					125			

Glu	Leu	Ser	Val	Leu	Ala	Asn	Phe	Ser	Gln	Pro	Glu	Ile	Val	Pro	Ile
	130					135					140				

Ser	Asn	Ile	Thr	Glu	Asn	Val	Tyr	Ile	Asn	Leu	Thr	Cys	Ser	Ser	Ile
145					150					155					160

His Gly Tyr Pro Glu Pro Lys Lys Met Ser Val Leu Leu Arg Thr Lys
165 170 175

Asn Ser Thr Ile Glu Tyr Asp Gly Ile Met Gln Lys Ser Gln Asp Asn
180 185 190

Val Thr Glu Leu Tyr Asp Val Ser Ile Ser Leu Ser Val Ser Phe Pro
195 200 205

Asp Val Thr Ser Asn Met Thr Ile Phe Cys Ile Leu Glu Thr Asp Lys
210 215 220

Thr Arg Leu Leu Ser Ser Pro Phe Ser Ile Glu Leu Glu Asp Pro Gln
225 230 235 240

Pro Pro Pro Asp His Ile Pro Trp Ile Thr Ala Val Leu Pro Thr Val
245 250 255

Ile Ile Cys Val Met Val Phe Cys Leu Ile Leu Trp Lys Trp Lys Lys
260 265 270

Lys Lys Arg Pro Arg Asn Ser Tyr Lys Cys Gly Thr Asn Thr Met Glu
275 280 285

Arg Glu Glu Ser Glu Gln Thr Lys Lys Arg Glu Lys Ile His Ile Pro
290 295 300

Glu Arg Ser Asp Glu Ala Gln Arg Val Phe Lys Ser Ser Lys Thr Ser
305 310 315 320

Ser Cys Asp Lys Ser Asp Thr Cys Phe
325

<210> 3
<211> 1151
<212> DNA
<213> Mus musculus

<400> 3
ggagcaagca gacgcgtaag agtggctcct gtaggcagca cggacttgaa caaccagact 60
cctgtagacg tgttccagaa cttacggaag caccacgat ggaccccgaga tgcaccatgg 120
gcttggaat ccttatcttt gtgacagtct tgctgatctc agatgctgtt tccgtggaga 180

```

cgcaagctta tttcaatggg actgcatatc tgccgtgccc atttaciaag gctcaaaaca      240
taagcctgag tgagctggta gtatTTTggc aggaccagca aaagtTggTt ctgtacgagc      300
actatTTTggg cacagagaaa cttgatagtg tgaatgccaa gtacctgggc cgcacgagct      360
ttgacaggaa caactggact ctacgacttc acaatgttca gatcaaggac atgggctcgt      420
atgattgttt tatacaaaaa aagccaccca caggatcaat tatcctccaa cagacattaa      480
cagaactgtc agtgatcgcc aacttcagtg aacctgaaat aaaactggct cagaatgtaa      540
caggaaattc tggcataaat ttgacctgca cgtctaagca aggtcacccg aaacctaaga      600
agatgtatTTt tctgataact aattcaacta atgagtatgg tgataacatg cagatatcac      660
aagataatgt cacagaactg ttcagtatct ccaacagcct ctctctttca ttcccggatg      720
gtgtgtggca tatgaccgtt gtgtgtgttc tggaaacgga gtcaatgaag atttcctcca      780
aacctctcaa ttTcactcaa gagtttccat ctctcaaac gtattggaag gagattacag      840
cttcagttac tgtggccctc ctcttTgtga tgctgctcat cattgtatgt cacaagaagc      900
cgaatcagcc tagcaggccc agcaacacag cctctaagtt agagcgggat agtaacgctg      960
acagagagac tatcaacctg aaggaacttg aacccccaaat tgcttcagca aaaccaaTg      1020
cagagtgaag gcagtgagag cctgaggaaa gagttaaaaa ttgctttgcc tgaaataaga      1080
agtgcagagt ttctcagaat tcaaaaatgt tctcagctga ttggaattct acagttgaat      1140
aattaaagaa c                                                    1151

```

```

<210> 4
<211> 309
<212> PRT
<213> Mus musculus

```

```
<400> 4
```

```

Met Asp Pro Arg Cys Thr Met Gly Leu Ala Ile Leu Ile Phe Val Thr
1              5              10              15

```

```

Val Leu Leu Ile Ser Asp Ala Val Ser Val Glu Thr Gln Ala Tyr Phe
                20              25              30

```

```

Asn Gly Thr Ala Tyr Leu Pro Cys Pro Phe Thr Lys Ala Gln Asn Ile
          35              40              45

```

```

Ser Leu Ser Glu Leu Val Val Phe Trp Gln Asp Gln Gln Lys Leu Val
          50              55              60

```

Leu Tyr Glu His Tyr Leu Gly Thr Glu Lys Leu Asp Ser Val Asn Ala
65 70 75 80

Lys Tyr Leu Gly Arg Thr Ser Phe Asp Arg Asn Asn Trp Thr Leu Arg
85 90 95

Leu His Asn Val Gln Ile Lys Asp Met Gly Ser Tyr Asp Cys Phe Ile
100 105 110

Gln Lys Lys Pro Pro Thr Gly Ser Ile Ile Leu Gln Gln Thr Leu Thr
115 120 125

Glu Leu Ser Val Ile Ala Asn Phe Ser Glu Pro Glu Ile Lys Leu Ala
130 135 140

Gln Asn Val Thr Gly Asn Ser Gly Ile Asn Leu Thr Cys Thr Ser Lys
145 150 155 160

Gln Gly His Pro Lys Pro Lys Lys Met Tyr Phe Leu Ile Thr Asn Ser
165 170 175

Thr Asn Glu Tyr Gly Asp Asn Met Gln Ile Ser Gln Asp Asn Val Thr
180 185 190

Glu Leu Phe Ser Ile Ser Asn Ser Leu Ser Leu Ser Phe Pro Asp Gly
195 200 205

Val Trp His Met Thr Val Val Cys Val Leu Glu Thr Glu Ser Met Lys
210 215 220

Ile Ser Ser Lys Pro Leu Asn Phe Thr Gln Glu Phe Pro Ser Pro Gln
225 230 235 240

Thr Tyr Trp Lys Glu Ile Thr Ala Ser Val Thr Val Ala Leu Leu Leu
245 250 255

Val Met Leu Leu Ile Ile Val Cys His Lys Lys Pro Asn Gln Pro Ser
260 265 270

Arg Pro Ser Asn Thr Ala Ser Lys Leu Glu Arg Asp Ser Asn Ala Asp
275 280 285

Arg Glu Thr Ile Asn Leu Lys Glu Leu Glu Pro Gln Ile Ala Ser Ala
 290 295 300

Lys Pro Asn Ala Glu
 305

<210> 5
 <211> 1491
 <212> DNA
 <213> Homo sapiens

<400> 5
 ccaaagaaaa agtgatttgt cattgcttta tagactgtaa gaagagaaca tctcagaagt 60
 ggagtcttac cctgaaatca aaggatttaa agaaaaagtg gaatttttct tcagcaagct 120
 gtgaaactaa atccacaacc tttggagacc caggaacacc ctccaatctc tgtgtgtttt 180
 gtaaacadca ctggaggggtc ttctacgtga gcaattggat tgtcatcagc cctgcctggt 240
 ttgcacctgg gaagtgccct ggtcttactt ggggtccaaat tggttggttt cacttttgac 300
 cctaagcatc tgaagccatg ggccacacac ggaggcaggg aacatcacca tccaagtgtc 360
 catacctgaa tttctttcag ctcttggtgc tggctggtct ttctcacttc tgttcaggtg 420
 ttatccacgt gaccaaggaa gtgaaagaag tggcaacgct gtccctgtggt cacaatgttt 480
 ctgttgaaga gctggcacia actcgcatct actggcaaaa ggagaagaaa atggtgctga 540
 ctatgatgtc tggggacatg aatatatggc ccgagtacaa gaaccggacc atctttgata 600
 tcactaataa cctctccatt gtgatcctgg ctctgcgccc atctgacgag ggcacatacg 660
 agtgtgttgt tctgaagtat gaaaaagacg ctttcaagcg ggaacacctg gctgaagtga 720
 cgttatcagt caaagctgac ttccctacac ctagtatatc tgactttgaa attccaactt 780
 ctaatattag aaggataatt tgctcaacct ctggagggtt tccagagcct cacctctcct 840
 ggttggaana tggagaagaa ttaaatgcc tcaacacaac agtttcccaa gatcctgaaa 900
 ctgagctcta tgctgttagc agcaaactgg atttcaatat gacaaccaac cacagcttca 960
 tgtgtctcat caagtatgga catttaagag tgaatcagac cttcaactgg aatacaacca 1020
 agcaagagca ttttcctgat aacctgctcc catcctgggc cattacctta atctcagtaa 1080
 atggaathtt tgtgatatgc tgccctgacct actgctttgc cccaagatgc agagagagaa 1140
 ggaggaatga gagattgaga agggaaagtg tacgccctgt ataacagtgt ccgcagaagc 1200
 aaggggctga aaagatctga aggtagcctc cgtcatctct tctgggatac atggatcgtg 1260

gggatcatga ggcattcttc ccttaacaaa ttttaagctgt tttacccact acctcacctt 1320
 cttaaaaacc tctttcagat taagctgaac agttacaaga tggctggcat ccctctcctt 1380
 tctccccata tgcaatttgc ttaatgtaac ctcttctttt gccatgtttc cattctgccca 1440
 tcttgaattg tcttgtcagc caattcatta tctattaaac actaatttga g 1491

<210> 6
 <211> 288
 <212> PRT
 <213> Homo sapiens

<400> 6

Met Gly His Thr Arg Arg Gln Gly Thr Ser Pro Ser Lys Cys Pro Tyr
 1 5 10 15

Leu Asn Phe Phe Gln Leu Leu Val Leu Ala Gly Leu Ser His Phe Cys
 20 25 30

Ser Gly Val Ile His Val Thr Lys Glu Val Lys Glu Val Ala Thr Leu
 35 40 45

Ser Cys Gly His Asn Val Ser Val Glu Glu Leu Ala Gln Thr Arg Ile
 50 55 60

Tyr Trp Gln Lys Glu Lys Lys Met Val Leu Thr Met Met Ser Gly Asp
 65 70 75 80

Met Asn Ile Trp Pro Glu Tyr Lys Asn Arg Thr Ile Phe Asp Ile Thr
 85 90 95

Asn Asn Leu Ser Ile Val Ile Leu Ala Leu Arg Pro Ser Asp Glu Gly
 100 105 110

Thr Tyr Glu Cys Val Val Leu Lys Tyr Glu Lys Asp Ala Phe Lys Arg
 115 120 125

Glu His Leu Ala Glu Val Thr Leu Ser Val Lys Ala Asp Phe Pro Thr
 130 135 140

Pro Ser Ile Ser Asp Phe Glu Ile Pro Thr Ser Asn Ile Arg Arg Ile
 145 150 155 160

Ile Cys Ser Thr Ser Gly Gly Phe Pro Glu Pro His Leu Ser Trp Leu

	165		170		175
Glu Asn Gly	Glu Glu Leu Asn Ala	Ile Asn Thr Thr Val	Ser Gln Asp		
180		185	190		
Pro Glu Thr	Glu Leu Tyr Ala Val	Ser Ser Lys Leu Asp	Phe Asn Met		
195		200	205		
Thr Thr Asn	His Ser Phe Met Cys	Leu Ile Lys Tyr	Gly His Leu Arg		
210		215	220		
Val Asn Gln	Thr Phe Asn Trp Asn Thr	Thr Lys Gln Glu His	Phe Pro		
225		230	235	240	
Asp Asn Leu	Leu Pro Ser Trp Ala Ile	Thr Leu Ile Ser Val	Asn Gly		
	245	250	255		
Ile Phe Val	Ile Cys Cys Leu Thr Tyr	Cys Phe Ala Pro Arg	Cys Arg		
	260	265	270		
Glu Arg Arg	Arg Asn Glu Arg Leu Arg	Arg Glu Ser Val Arg	Pro Val		
	275	280	285		

<210> 7
 <211> 1716
 <212> DNA
 <213> Mus musculus

<400> 7	
gagttttata cctcaataga ctcttactag tttctctttt tcaggttgtg aaactcaacc	60
ttcaaagaca ctctgttcca tttctgtgga ctaataggat catcttttagc atctgccggg	120
tg gatgccat ccaggcttct ttttctacat ctctgtttct cgatttttgt gagcctagga	180
ggtgcctaag ctccattggc tctagattcc tggctttccc catcatgttc tccaaagcat	240
ctgaagctat ggcttgcaat tg tcaattga tgcaggatac accactcctc aagtttccat	300
gtccaaggct caatcttctc tttgtgctgc tgattcgtct ttcacaagtg tcttcagatg	360
ttgatgaaca actgtccaag tcagtgaag ataaggatt gctgccttgc cgttacaact	420
ctcctcatga agatgagtct gaagaccgaa tctactggca aaaacatgac aaagtgggtgc	480
tgtctgtcat tgctgggaaa ctaaaagtgt ggcccgagta taagaaccgg actttatatg	540
acaacactac ctactctctt atcatcctgg gcctggctct ttcagaccgg ggcacatata	600

gctgtgtcgt tcaaaagaag gaaagaggaa cgtatgaagt taaacacttg gcttttagtaa	660
agttgtccat caaagctgac ttctctaccc ccaacataac tgagtctgga aacccatctg	720
cagacactaa aaggattacc tgctttgctt ccggggggtt cccaaagcct cgcttctctt	780
ggttggaaaa tggaagagaa ttacctggca tcaatacgac aatttcccag gatcctgaat	840
ctgaattgta caccattagt agccaactag atttcaatac gactcgcaac cacaccatta	900
agtgtctcat taaatatgga gatgctcacg tgtcagagga cttcacctgg gaaaaacccc	960
cagaagaccc tcctgatagc aagaacacac ttgtgtctct tggggcagga ttcggcgag	1020
taataacagt cgtcgtcatc gttgtcatca tcaaagtctt ctgtaagcac agaagctggt	1080
tcagaagaaa tgaggcaagc agagaaacaa acaacagcct taccttcggg cctgaagaag	1140
cattagctga acagaccgtc ttcttttagt tcttctctgt ccatgtggga tacatggtat	1200
tatgtggctc atgaggtaca atctttcttt cagcaccgtg ctagctgac tttcggacaa	1260
cttgacacaa gatagagtta actgggaaga gaaagccttg aatgaggatt tctttccatc	1320
aggaagctac gggcaagttt gctgggcctt tgattgcttg atgactgaag tggaaaggct	1380
gagcccactg tgggtggtgc tagccctggg caggggcagg tgaccctggg tggataaga	1440
aaaagagctg tcactaaaag gagaggtgcc tagtcttact gcaacttgat atgtcatggt	1500
tggttggtgt ctgtgggagg cctgcccttt tctgaagaga agtgggtggga gagtggatgg	1560
ggtgggggca gaggaaaagt gggggagagg gcctgggagg agaggaggga gggggacggg	1620
gtgggggtgg ggaaaactat ggttgggatg taaaaacgga taataatata aatattaaat	1680
aaaaagagag tattgagcaa aaaaaaaaaa aaaaaa	1716

<210> 8
 <211> 306
 <212> PRT
 <213> Mus musculus

<400> 8

Met	Ala	Cys	Asn	Cys	Gln	Leu	Met	Gln	Asp	Thr	Pro	Leu	Leu	Lys	Phe
1				5				10						15	

Pro	Cys	Pro	Arg	Leu	Ile	Leu	Leu	Phe	Val	Leu	Leu	Ile	Arg	Leu	Ser
			20					25					30		

Gln	Val	Ser	Ser	Asp	Val	Asp	Glu	Gln	Leu	Ser	Lys	Ser	Val	Lys	Asp
		35					40					45			

Lys Val Leu Leu Pro Cys Arg Tyr Asn Ser Pro His Glu Asp Glu Ser
50 55 60

Glu Asp Arg Ile Tyr Trp Gln Lys His Asp Lys Val Val Leu Ser Val
65 70 75 80

Ile Ala Gly Lys Leu Lys Val Trp Pro Glu Tyr Lys Asn Arg Thr Leu
85 90 95

Tyr Asp Asn Thr Thr Tyr Ser Leu Ile Ile Leu Gly Leu Val Leu Ser
100 105 110

Asp Arg Gly Thr Tyr Ser Cys Val Val Gln Lys Lys Glu Arg Gly Thr
115 120 125

Tyr Gly Val Lys His Leu Ala Leu Val Lys Leu Ser Ile Lys Ala Asp
130 135 140

Phe Ser Thr Pro Asn Ile Thr Glu Ser Gly Asn Pro Ser Ala Asp Thr
145 150 155 160

Lys Arg Ile Thr Cys Phe Ala Ser Gly Gly Phe Pro Lys Pro Arg Phe
165 170 175

Ser Trp Leu Glu Asn Gly Arg Glu Leu Pro Gly Ile Asn Thr Thr Ile
180 185 190

Ser Gln Asp Pro Glu Ser Glu Leu Tyr Thr Ile Ser Ser Gln Leu Asp
195 200 205

Phe Asn Thr Thr Arg Asn His Thr Ile Lys Cys Leu Ile Lys Tyr Gly
210 215 220

Asp Ala His Val Ser Glu Asp Phe Thr Trp Glu Lys Pro Pro Glu Asp
225 230 235 240

Pro Pro Asp Ser Lys Asn Thr Leu Val Leu Phe Gly Ala Gly Phe Gly
245 250 255

Ala Val Ile Thr Val Val Val Ile Val Val Ile Ile Lys Cys Phe Cys
260 265 270

Lys His Arg Ser Cys Phe Arg Arg Asn Glu Ala Ser Arg Glu Thr Asn
275 280 285

Asn Ser Leu Thr Phe Gly Pro Glu Glu Ala Leu Ala Glu Gln Thr Val
290 295 300

Phe Leu
305

<210> 9
<211> 12
<212> DNA
<213> Artificial Sequence

<220>
<223> primer

<400> 9
ctttagagca ca 12

<210> 10
<211> 8
<212> DNA
<213> Artificial Sequence

<220>
<223> primer

<400> 10
ctctaaag 8

<210> 11
<211> 20
<212> DNA
<213> Artificial Sequence

<220>
<223> primer

<400> 11
taatacgact cactataggg 20

<210> 12
<211> 18
<212> DNA
<213> Artificial Sequence

<220>
<223> primer

<400> 12

taagggttcct tcacaaag 18

<210> 13
<211> 21
<212> DNA
<213> Artificial Sequence

<220>
<223> primer

<400> 13
acataagcct gagtgagctg g 21

<210> 14
<211> 21
<212> DNA
<213> Artificial Sequence

<220>
<223> primer

<400> 14
atgatgagca gcatcacaag g 21

<210> 15
<211> 21
<212> DNA
<213> Artificial Sequence

<220>
<223> primer

<400> 15
tggtcgagtg agtccgaata c 21

<210> 16
<211> 21
<212> DNA
<213> Artificial Sequence

<220>
<223> primer

<400> 16
gacgagtagt aacatacagt g 21

<210> 17
<211> 1163
<212> DNA
<213> Mus musculus

<400> 17

cccacgcgtc cgggagcaag cagacgcgta agagtggctc ctgtaggcag cacggacttg	60
aacaaccaga ctctgtaga cgtgttccag aacttacgga agcaccacg atggaccca	120
gatgcaccat gggcttggca atccttatct ttgtgacagt cttgctgac tcagatgctg	180
tttccgtgga gacgcaagct tatttcaatg ggactgcata tctgccgtgc ccatttacia	240
aggctcaaaa cataagcctg agtgagctgg tagtattttg gcaggaccag caaaagtgg	300
ttctgtacga gcactatttg ggcacagaga aacttgatag tgtgaatgcc aagtacctg	360
gccgcacgag ctttgacagg aacaactgga ctctacgact tcacaatgtt cagatcaagg	420
acatgggctc gtatgattgt ttatacaaa aaaagccacc cacaggatca attatcctcc	480
aacagacatt aacagaactg tcagtgatcg ccaacttcag tgaacctgaa ataaaactgg	540
ctcagaatgt aacaggaaat tctggcataa atttgacctg cagctctaag caaggtcacc	600
cgaaacctaa gaagatgtat tttctgataa ctaattcaac taatgagtat ggtgataaca	660
tgcagatatc acaagataat gtcacagaac tgttcagtat ctccaacagc ctctctcttt	720
cattcccgga tgggtgtgtg catatgaccg ttgtgtgtgt tctggaaacg gagtcaatga	780
agatttcctc caaacctctc aatttcactc aagagtttcc atctcctcaa acgtattgga	840
aggagattac agcttcagtt actgtggccc tcctccttgt gatgctgctc atcattgtat	900
gtcacaagaa gccgaatcag cctagcaggc ccagcaacac agcctctaag ttagagcggg	960
atagtaacgc tgacagagag actatcaacc tgaaggaact tgaaccccaa attgcttcag	1020
caaaaccaa tgcagagtga aggagtgag agcctgagga aagagttaaa aattgctttg	1080
cctgaaataa gaagtgcaga gtttctcaga attcaaaaat gttctcagct gattggaatt	1140
ctacagttga ataattaaag aac	1163